ABSTRACT OF THE DISCLOSURE

In one aspect, the present invention is directed to a glucose sensing device for implantation within subcutaneous tissue of an animal body. In one embodiment, the glucose sensing device includes a first chamber containing first magnetic particles and a hydrocolloid solution (for example, ConA-dextran hydrocolloid) wherein the first magnetic particles are dispersed in the hydrocolloid solution. In operation, glucose within the animal may enter and exit the first chamber and the hydrocolloid solution changes in response to the presence or concentration of glucose within the first chamber. The sensing device also includes a reference chamber containing second magnetic particles and a reference solution wherein the second magnetic particles are dispersed in the reference solution. The reference solution (for example, oil or alcohol compounds) includes a known or fixed viscosity. The reference solution may also be a hydrocolloid solution (for example, ConA-dextran hydrocolloid). The first and/or second magnetic particles may include amine-terminated particles, at least one rare earth element (for example, neodymium or samarium), and/or a ferromagnetic material.